

Neue und interessante Milben aus dem Genfer Museum XXXVIII¹. Oribatids (Acari) from Monte Susana (Tierra del Fuego, Argentina)

by

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With 38 figures + 1 sketch

ABSTRACT

New and interesting mites from the Geneva Museum XXXVIII. Oribatids (Acari) from Monte Susana (Tierra del Fuego, Argentina). — From four soil samples taken on the Mount Susana near Ushuaia 29 Oribatid species have been identified, 17 of them are described as new to science. It was necessary to establish 4 new genera (*Antarctoplophora*, *Fuegoplophora*, *Neoprotophthiracarus* in the family Phthiracaridae and *Hauserocera-toppia* in the family Metrioppiidae). Ecological and zoogeographical analyses are given.

INTRODUCTION

During a recent visit to the Muséum d'Histoire naturelle of Geneva Dr. B. Hauser asked me to examine an extremely interesting Oribatid material from Monte Susana near Ushuaia, Tierra del Fuego (Argentina). The samples studied had been collected by his friend, the renowned botanist Dr. E. Horak (Zürich) during his mycological investigations in that part of the world (HORAK 1980) and extracted in Berlese funnels in Geneva.

The value of the material is derived partly from its place of origin, partly from its extraordinary richness in species and individuals, and partly from the fact that its

¹ XX.: Beitrag zur Kenntnis der Oribatiden-Fauna Griechenlands (Acari). (*Revue suisse Zool.* 81: 569-590, 1974).

collector has segregated and described the habitats with the botanist's eye. This allows inferences to be made on the ecological requirements of the species involved. I have to lay especial stress on the locality of the collection, because, on the one hand, we have hardly any data at our disposal with respect to the entire continent and especially to its southernmost part, while on the other, this region represents the presumable zoogeographical confines of the Subantarctic-Antarctic, and Andean-Patagonian Subregions. Accordingly, highly interesting observations could be made on the distribution of the faunal elements of the erstwhile Gondwana massif, through New Zealand and the Subantarctic Islands to Patagonia. Besides the systematic and taxonomic investigations my aim was therefore to submit additional data for the further clarification of the above problem.

The first data concerning the Oribatid fauna of South America, that is, the Neogaea, had already been published by the end of the last century (BERLESE 1888), but hardly anything was done in the following decades to explore one of the most important groups of the terricolous mesofauna. The sporadically published data and short papers (KRAMER 1898; SELLNICK 1922a, 1922b; WILLMANN 1930, 1933, 1936, etc.) contributed more to our knowledge of the systematics than to a finer delineation of the faunistic picture of the region.

In the fifties and sixties, collections had been made by F. Schaller et al., M. Hammer, R. Schuster, Gy. Topál, and finally by the Hungarian soil zoological expeditions as well as Di Castri and his co-workers. All this material allowed the commencement of a comprehensive survey and systematic investigation of the fauna. The common character of the majority of these collectings and researches lies in their delimitation to the tropical areas of the Region, excepting the collecting activities of Hammer, and of Covarrubias among Di Castri's co-workers, in the southernmost territories.

The elaboration of these and of some smaller materials (K. Lenko, Dr. W. Rühm, etc.) has already begun, although papers have been published preponderantly with regard to the tropical areas again (HAMMER 1958-62; BECK 1963; SCHUSTER 1962; BALOGH & CSISZÁR 1963; BALOGH & MAHUNKA, 1967-79; COVARRUBIAS 1967), and only HAMMER's (1962) detailed contribution and some of COVARRUBIAS' data refer to localities nearer or similar to the area of the material under discussion. In the course of elaboration of the material placed at my disposal, I had to extend my attention — owing to the connections mentioned above — to the papers discussing the results of the identification of materials originating from the Antarctic itself and from the Subantarctic Islands. Despite its geographical fragmentation, this area belongs, owing primarily to the work done by WALLWORK (1963-73) and DALENIUS & WILSON (1958), among the adequately explored regions, hence suitable for comparison.

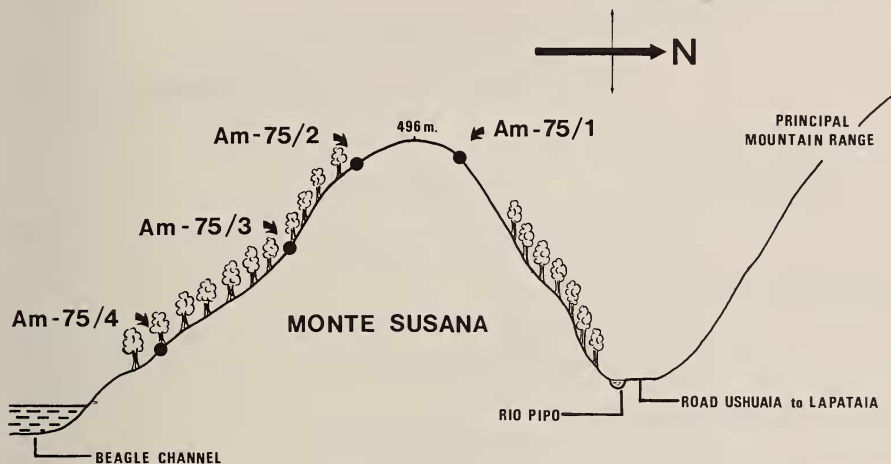
LIST OF LOCALITIES

- Am-75/1: Argentinien: Feuerland, Monte Susana im W von Ushuaia, Südflanke. Alpine Matte mit *Empetrum*, verschiedenen Compositen, Moosen, Flechten, oberhalb der Waldgrenze, relativ trockener Standort (N: sonnenexponiert), ca 485 m, 26.III.1975, leg. E. Horak (BERLESE: 11.IV.-6.VIII.75)
- Am-75/2: Argentinien: Feuerland, Monte Susana im W von Ushuaia, Südflanke. Unter den obersten *Nothofagus pumilio* (Waldgrenze), unterhalb der Streuschicht, feuchter Standort, ca 460 m, 26.III.1975, leg. E. Horak (BERLESE: 11.IV.-6.VIII.75)

Am-75/3: Argentinien: Feuerland, Monte Susana im W von Ushuaia, Südflanke. In *Nothofagus pumilio-betuloides* Wald, ohne anderen Unterwuchs, Streuschicht, ca 300 m, 26.III.75, leg. E. Horak (BERLESE: 11.IV.-26.VI.75)

Am-75/4: Argentinien: Feuerland, Monte Susana im W von Ushuaia, Südflanke. In *Nothofagus pumilio-betuloides* Wald, ohne anderen Unterwuchs, Streuschicht, ca 120 m, 26.III.1975 (BERLESE: 11.IV.-8.VIII.75)

The collector of the material submitted the following sketch of the area (design J. D. Bourne):



Despite its simplicity, it illustrates rather conspicuously the sites of collections and the differences between them.

In the four samples, I have identified a total of 29 species; among them 17 are new to science, and 4 new genera had to be established.

LIST OF IDENTIFIED SPECIES

Phthiracaridae Perty, 1841

- Antarctoplophora darwini* sp. n.
- Fuegoplophora foveoreticulata* sp. n.
- Neoprotophtiracarus equisetosus* sp. n.
- Neoprotophtiracarus flagellatus* sp. n.
- Notophtiracarus niger* sp. n.

Brachychthoniidae Balogh, 1943

- Eobrachychthonius argentinensis* Hammer, 1958

Locality: Am-75/4

Liochthonius fimbriatus Hammer, 1958

Locality: Am-75/3

Liochthonius nodifer Hammer, 1962

Locality: Am-75/3

Crotoniidae Thorell, 1876

Acronothrus cophinarius Michael, 1908

Locality: Am-75/2

Plateremaeidae Trägårdh, 1931

Pedrocortesia australis Hammer, 1962

Locality: Am-75/2

Eutegeidae Balogh, 1965

Nodocepheus cerebialis sp. n.

Metrioppiidae Balogh, 1943

Hauseroceratoppia horaki sp. n.

Otocephidae Balogh, 1961

Nesotocepheus australis sp. n.

Nesotocepheus hauseri sp. n.

Oppiidae Grandjean, 1954

Globoppia intermedia Hammer, 1962

Localities: Am-75/2; Am-75/3

Globoppia major Hammer, 1962

Localities: Am-75/3; Am-75/4

Globoppia minor Hammer, 1962

Localities: Am-75/2; Am-75/3

Globoppia wallworki sp. n.

Oppia magellanicus Hammer, 1962

Locality: Am-75/3

Oppia patagonica sp. n.

Oppia pseudocorrugata sp. n.

Suctobelbidae Grandjean, 1954

Suctobelba diceros sp. n.

Anderemaeidae Balogh, 1972

Anderemaeus hauseri sp. n.

Cristeremaeus clavatus sp. n.

Cymbaeremaeidae Sellnick, 1928

Glanderemaeus hammerae Balogh et Csissár, 1963

Locality: Am-75/4

Oribatulidae

Maculobates breviporosus sp. n.

Haplozetidae Grandjean, 1936

Tuxenia brevisetosa sp. n.

Ceratozetidae Jacot, 1925

Magellozetes antarcticus (Michael, 1895)

Locality: Am-75/4

Oribatellidae Jacot, 1925

Oribatella palustris Hammer, 1962

Locality: Am-75/2

ZOOGEOGRAPHICAL AND ECOLOGICAL CONSIDERATIONS

The enumeration of these species, compared with the results published from the neighbouring areas and also with our own still unpublished ones, allows, as regards the problem of zoogeographical boundaries, some justifiable inferences:

1. Concerning the higher taxa, there are so many characteristically common elements that the relatedness of the regions mentioned in the introduction and the common origin of the faunas concerned may be regarded as proven;

2. Today the fauna of the area is rather separated, yet it belongs unequivocally to the fauna of the Neogaeic Region, and it cannot be considered as even a transitional territory between the Subantarctic Subregion of the Arctogaea and the Neogaea: the borderline between the two regions runs essentially further southward;

3. It is also highly probable that it were incorrect, at least as concerns the soil fauna, to maintain and to define, along the ridge of the Andes to the tip of the continent, the boundary between the Chilean and Patagonian faunal districts. According to earlier, and to my recent investigations, the actual border is a zone perpendicular to the longitudinal axis of the continent, somewhere along the Rio Chubut. Any exact delimitation of its position requires further investigations.

The characterization and the designation of the confines of a faunistic area by any given animal group is generally very difficult. However, for the substantiation of the preceding statements, some correlations of decisive value, at least in my estimation, still offer themselves:

1. The most primitive genera (possessing 6-9 anogenital pairs of setae) of the family *Phthiracaridae* occur only in the region under consideration (Subantarctic Islands, New Zealand, Southern Chile, Patagonia);

2. The genera listed below also have the same range:

Magellozetes Hammer, 1962

Topalia Balogh et Csiszár, 1963

Tuxenia Hammer, 1958

Nesotocepheus Hammer, 1966

Acronothrus Berlese, 1916

3. There is a great number of species occurring only in Southern Chile, Southern Argentina and Patagonia (HAMMER 1962a, b) and, at the same time, genera and species endemic for Patagonia (this assertion needs, of course, further corroboration), e.g. *Glanderemaeus*, Balogh et Csiszár, 1963, *Anderemaeus* Hammer, 1958.

The comparison per sample of the species shown from the four samples displays interesting, but from the ecological conditions hardly explicable, differences:

Of the 5 species in sample I, four occurred only there;

Of the 15 species in sample II, seven occurred only there;

Of the 17 species in sample III, six occurred only there;

Of the 7 species in sample IV, three occurred only there.

The poorness in species and individuals of sample I can probably be explained by the absence of forest and its northern (= sunny) exposition. This is corroborated by the fact that, with one exception, the species concerned have not been found in the other three samples. The specific composition of samples II and III, especially concerning those which may be regarded as dominant (*Globoppia* spp., *Fugeoplophora foveoreticulata*, *Neoprotophthiracarus* spp.), is unequivocal. It is rather striking that I found also a paucity of species at the lowest elevation, in samples III and IV with essentially the same composition. The explanation is attributable to manifestly unknown effects. It should be noted that no species occurred common in every one of the four samples, and there were only two which occurred common in samples II, III, and IV, namely *Antarctoplophora darwini* and *Hauseroceratoppia horaki*.

NEW TAXA

The taxa in the family *Phthiracaridae* of the Southern Hemisphere differ from those found in other zoogeographical regions (Palaeartic, Ethiopian) in that they exhibit a neotrichy for both the anal and the adanal setae. Such forms are also known from New Zealand, Chile, and the Campbell Islands.

In the material discussed, several such forms have been found, and they are all new to science. In the number of notogastral as well as the anal to adanal setae, they display differences to such an extent that, with one exception, they could not be relegated to the known genera without the disruption of their homogeneity. On the other hand, this extraordinary diversity poses the problem of the validity of the generic characters hitherto assumed. Since further material will be necessary to solve the problem, I cannot but establish new genera, at least for the present divers species.

Key to the separation of Phthiracarid genera displaying an anogenital neotrichy

- 1 (4) Anal plates with 9 pairs of setae.
- 2 (3) Anal plates, along inner border with 5 and in adanal position with 4 setae.
17 pairs of notogastral hairs *Neophthiracarus* Balogh et Csiszár, 1963
- 3 (2) Anal plates, along inner border with 2 and in adanal position with 7 setae.
22 pairs of notogastral setae *Antarctoplophora* gen. n.
- 4 (1) Anal plates with 7 pairs of setae.
- 5 (6) Prodorsal hair *in* erect, incrassate, proclinate. All other setae thin, arcuate.
22 pairs of notogastral setae present *Protophthiracarus* Balogh, 1972
- 6 (5) Prodorsal hair *in* thin, arcuate, similar to the others.
- 7 (8) Anal plate with 2 pairs of anal and 5 pairs of setae in adanal position.
25 pairs of notogastral setae *Fugeoplophora* gen. n.
- 8 (7) Anal plate with 3 pairs of anal and 4 (3) pairs of setae in adanal position.
18-20 pairs of notogastral setae *Neoprophthiracarus* gen. n.

Antarctoplophora gen. n.

Prodorsal hairs minute, arcuate. 22 pairs of thin, simple notogastral setae. 9 pairs of genital and 9 pairs of ano-adanal hairs. Anal plate with 2 pairs of setae near inner border, and with 7 pairs in an approximately V-shape, convergent towards inner borders; last pair aligned in one row, eight anal hairs.

Type-species: *Antarctoplophora darwini* sp. n.

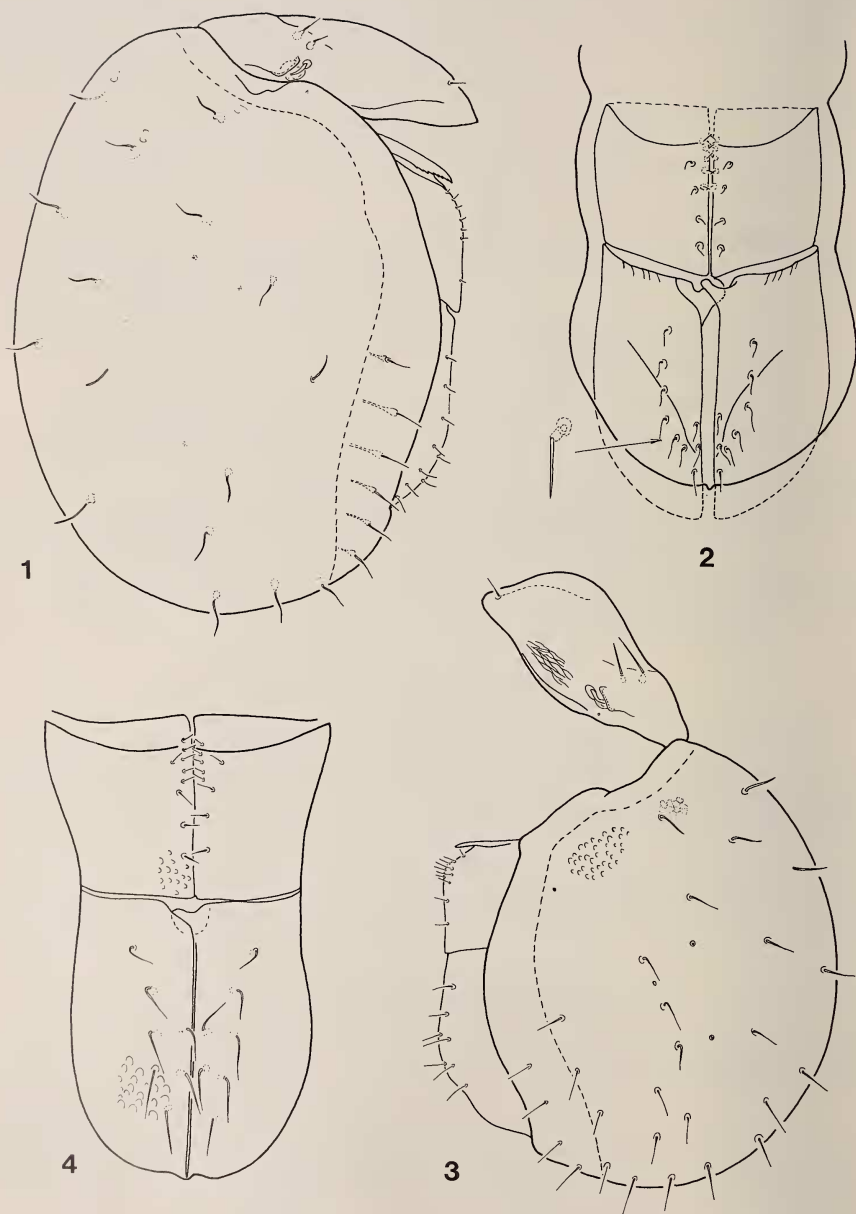
Remark: Its relation to the other genera appears in the identification key.

Antarctoplophora darwini sp. n.

Measurements: prodorsal length: 408-489 μ , notogastral height: 629-740 μ , notogastral length: 884-1 038 μ .

Aspis: in a lateral view slightly impressed anterior to lamellar and interlamellar hairs; in a superior view with a hardly discernible median ridge. Rostral, lamellar and interlamellar setae short and straight; lamellar hair slightly longer than interlamellar one. Sensillus short, apically clavate.

Notogaster (Fig. 1): in superior view wide, oval, in lateral view somewhat angulate, before hairs c_1 abruptly declivous, above anogenital plates convex. Surface finely punctate. 22 pairs of short, thin, characteristically arcuate notogastral setae, a neotrichy between hairs h and ps . Pori is and im very near to each other and behind hairs cp .



FIGS. 1-2. *Antarcticoplophora darwini* sp. n. — 1: lateral side, 2: anogenital region. FIGS. 3-4. *Fuegiplophora foveoreticulata* sp. n. — 3: lateral side, 4: anogenital region.

Anogenital region (Fig. 2): Anterior to genital plates a marginally dentate medial apophysis. Nine pairs of genital hairs: 4 longer and 5 shorter in arrangement. Anterior margin of anal plates with short, longitudinal rugae. Exterior margin of anal plate with 9 (8) hairs: 3 pairs parallel with inner margin, 6 (5) in an inclinate row.

Material examined: Holotype: Am-75/2, 9 paratypes from same sample; 12 paratypes: Am-75/3; 4 paratypes: Am-75/4. Holotype and 17 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 8 paratypes (234-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Fuegoplophora gen. n.

Prodorsal hairs minute, thin. 25-26 pairs of similar notogastral hairs. 9 pairs of genital and 7 pairs of ano-adanal hairs, latter ones equal in length, 2 anals arising immediately near inner margin of anal plates, the 5 other pairs in a longitudinal row each, slightly convergent from middle of anal plate towards inner margin.

Types-species: *Fuegoplophora foveoreticulata* sp. n.

Remark: Differential diagnosis as given in the identification key.

Fuegoplophora foveoreticulata sp. n.

Measurements: Prodorsal length: 368-480 μ , notogastral length: 656-1080 μ , notogastral height: 464-728 μ .

Aspis: Median line with a ridge in superior view, aspis anteriorly slightly angulate in lateral view. Rostral hairs minute, as well as lamellar and interlamellar ones, without any essential difference in length. Sensillus also short, stalk short, clavus heavily widened.

Notogaster (Fig. 3): Surface with a polygonal sculpture, consisting of foveolae. Notogastral hairs short and simple; a heavy neotrichy present between hairs *h* and *ps*; a total of 25-26 pairs of notogastral hairs.

Anogenital region (Fig. 4): Nine pairs of genital setae: 4 pairs longer and 5 pairs very short. Surface of anal plates ornamented with foveolae. Setae equal in length, arranged as in generic diagnosis.

Material examined: Holotype: Am-75/3; 7 paratypes: from the same sample; 6 paratypes: Am-75/2. Holotype and 9 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 4 paratypes (218-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Remark: The characters given in the generic diagnosis distinguish the new species from all known forms in the family.

Neoprotophthiracarus gen. n.

Prodorsal hairs uniform, all short and arcuate. Notogastral hairs long, 18-20 pairs present. 9 pairs of genital and 6-7 pairs of ano-adanal setae, latter ones uniform, 3 pairs (2 anals nearer each other and 1 more removed) arising near inner margin, 3 or 4 pairs on surface of anal plate, more removed from margin.

Type-species: *Neoprotophthiracarus flagellatus* sp. n.

Remarks: The type-species is accompanied by *N. equisetosus* sp. n., described hereunder, and *N. shiptoni* (Sheals et Macfarlane, 1966), **comb. n.** (= *Neophthiracarus shiptoni* Sheals et Macfarlane, 1966).

Neoprotophthiracarus equisetosus sp. n.

Measurements: Length of aspis: 248-264 μ , notogastral length: 448-520 μ , notogastral height: 300-344 μ .

Aspis: Margin with a narrow rim. Rostral, lamellar and interlamellar hairs nearly equal in length, slightly incrassate, weakly ciliate. Also exobothridial hair hardly shorter. Sensillus (Fig. 7) small, stalk short, clavus rotund.

Notogaster (Fig. 5): Surface smooth, with 18 pairs of bacilliform hairs, their distal half ciliate, some slightly arcuate, some straight.

Anogenital region (Fig. 6): 9 pairs of minute genital setae; 6 pairs of ano-adanal setae; 3 pairs arising along inner margin, but hair *ad*₁ (hindmost one) standing considerably further removed from the anterior ones than between each other.

Material examined: Holotype: Am-75/3; 3 paratypes from the same sample; 2 paratypes: Am-75/2. Holotype and 3 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes (219-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Remarks: The new species is characterized by the rigid, short notogastral hairs and the uniformly long rostral, lamellar and interlamellar setae. In the rather similar *N. shiptoni* (Sheals et Macfarlane, 1966), there is a double difference in length between the lamellar and interlamellar setae.

Neoprotophthiracarus flagellatus sp. n.

Measurements: Length of aspis: 248-280 μ , notogastral length: 456-528 μ , notogastral height: 316-336 μ .

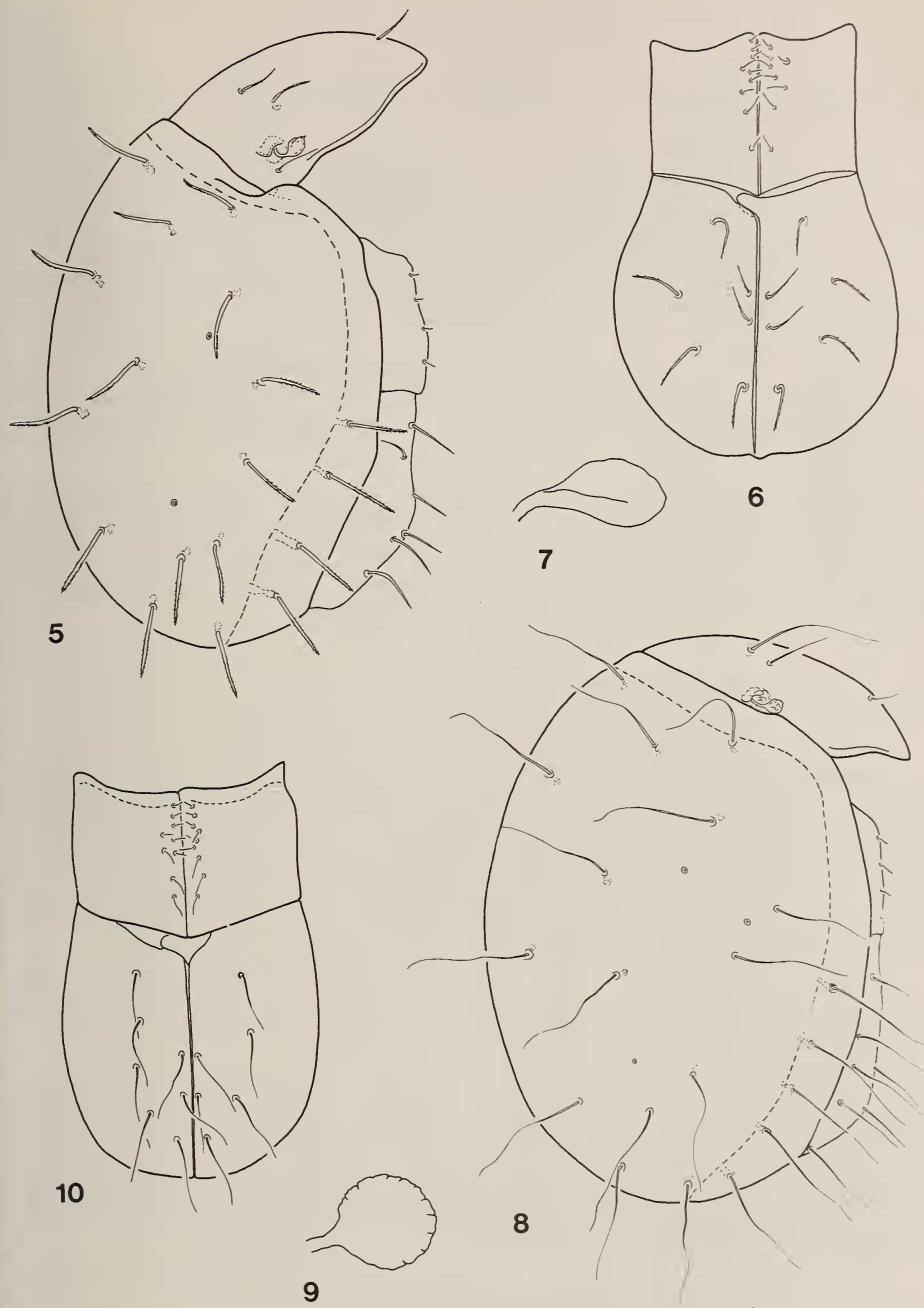
Aspis: Rim narrow. Rostral, lamellar and interlamellar hairs thin, setiform, attenuating. Lamellar hairs nearly two times longer than interlamellar ones. Sensillus (Fig. 9) very short, also its stalk; clavus rotund.

Notogaster (Fig. 8): Surface smooth, with 20 pairs of thin, apically flagellate hairs.

Anogenital region (Fig. 10): 9 pairs of minute genital and 6-7 pairs of ano-adanal setae; latter ones long, arcuate, thin, 3 pairs arising near inner margin.

Material examined: Holotype: Am-75/3; 6 paratypes from the same sample; 11 paratypes: Am-75/2. Holotype and 11 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 6 paratypes (220-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Remark: The new species differs from its congeners by the thinner, longer, and more arcuate hairs.



FIGS. 5-7. *Neoprotophthiracarus equisetosus* sp. n. — 5: lateral side, 6: anogenital region, 7: sensillus; FIGS. 8-10. *Neoprotophthiracarus flagellatus* sp. n. — 8: lateral side, 9: sensillus, 10: anogenital region.

Notophthiracarus niger sp. n.

Measurements: Aspis length: 302-344 μ , notogastral length: 588-670 μ , notogastral height: 348-384 μ .

Aspis: Bordered by a narrow rim. Surface laterally with sparsely spaced flat foveolae. A weak transverse lath anterior to lamellar and interlamellar setae. Rostral hairs adjacent, acute, ciliate. Lamellar and interlamellar setae rigid, long, apically obtuse, densely ciliate. Sensillus (Fig. 12) and its stalk short, clavus entirely rounded.

Notogaster (Fig. 11): Surface largely smooth, only the zone adjacent to anogenital region with foveolae. Excepting rim, notogaster black. 15 pairs of setae, similar to lamellar hairs.

Anogenital region (Fig. 13): Surface of genital plate also with foveolae. 4 pairs of longer and 5 pairs of shorter genital hairs. Two pairs of uniformly long setae originating along inner margin of anal plate. Two adanal hairs minute, one long, though considerably shorter than anal setae.

Material examined: Holotype: Am-75/1; 2 paratypes from the same sample. Holotype and 1 paratype preserved in the Muséum d'Histoire naturelle, Genève, 1 paratype (221-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Remark: The new species differs from its congeners in the genus *Notophthiracarus* Ramsay, 1966 by its characteristic, nearly wholly black colour.

Nodocephus cerebialis sp. n.

Measurements: Length: 208-226 μ , width: 130-142 μ .

Dorsal side (Fig. 14): Rostrum acute, rostral hairs minute, thin, adjacent to two large, rounded or elongated, conspicuous formations of (?) secretion. Lamellae very large, wide, nearly touching medially. Lamellar hairs originating from inner margins. A short transverse lath between lamellae. Interlamellar hairs minute. Sensillus short; with a wide clavus, its distal half aciculated. Humeral squama heavily developed, its surface roughly rugose, resembling cerebral rugosity. 9 pairs of notogastral hairs, setae ps_1 - ps_3 considerably shorter than their mates.

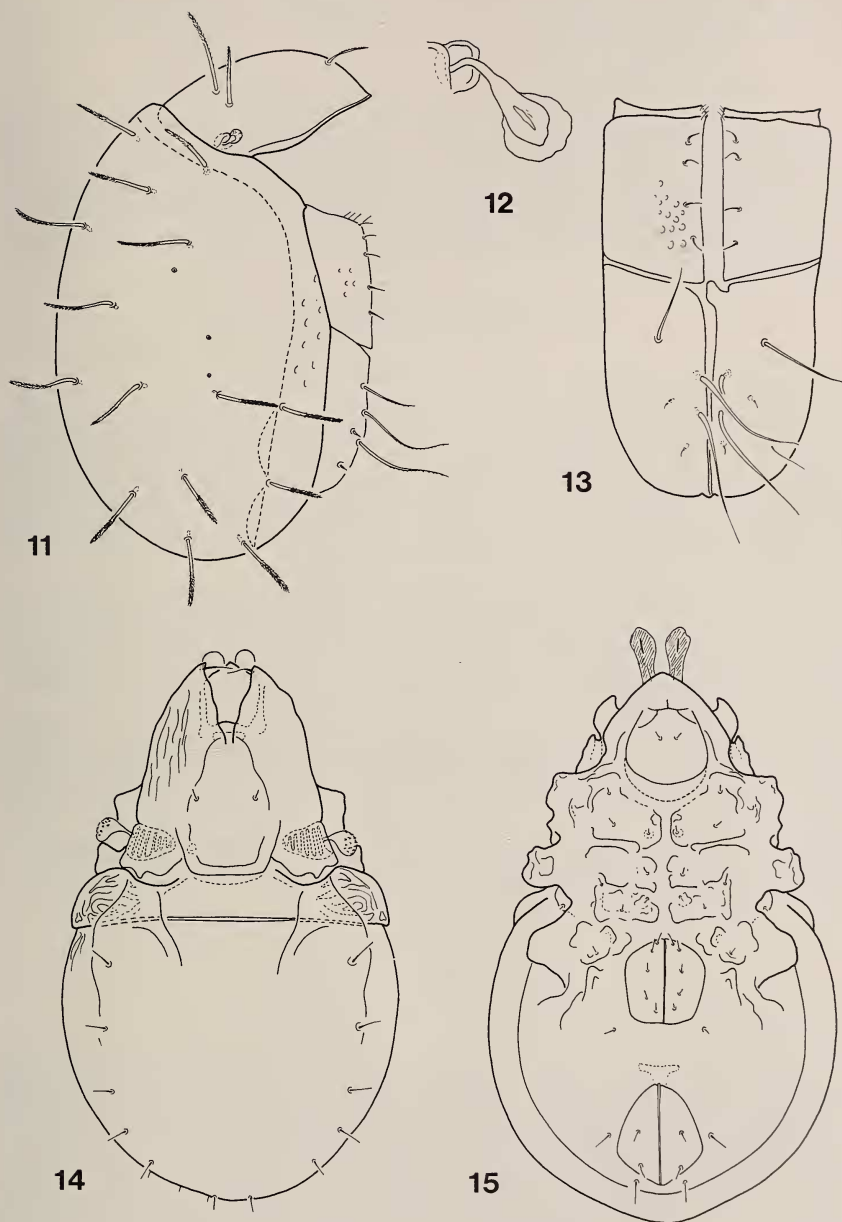
Ventral side (Fig. 15): Ventral surface heavily sclerotized, pedotecta roughly rugose. Epimeral hairs minute. 5 pairs of minute genital, 1 pair of aggenital, 2 pairs of anal, and 2 pairs of adanal hairs present. Pori *iad* absent.

Material examined: Holotype: Am-75/2; 4 paratypes from the same sample. Holotype and 2 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes (222-PO-77) deposited in the Hungarian Natural History Museum, Budapest.

Remarks: The sensillus of the known species is ciliate and long-stalked. The new species is well characterized also by the humeral squama ornamented with convoluted rugae, and the prodorsal blob of secretion.

Hauseroceratoppia gen. n.

Fam. *Metrioppiidae*. Rostrum with a deep incision, laterally without teeth. Rostral hairs arising on prodorsal surface. Tutorium long, its apex free. Lamellae long, but not reaching rostrum, interlamellar hairs originating on their cuspides. Sensillus setiform.



FIGS. 11-13. *Notophthiracarus niger* sp. n. — 11: lateral side, 12: sensillus, 13: anogenital region;
 FIGS. 14-15. *Nodocepheus cerebrealis* sp. n. — 14: dorsal side, 15: ventral side.

Notogaster with 5 pairs of alveoli and 3 pairs of long, robust hairs. Epimeral setae heavy, proclinate, hair *3b* longer and heavier than the others. 6 pairs of genital, 1 pair of long aggenital, 2 pairs of anal and 3 pairs of adanal hairs. Pori *iad* in praeanal position. Legs tridactylous, slightly heterodactylous.

Type-species: *Hauseroceratoppia horaki* sp. n.

Remarks: The new genus stands nearest to the genera *Ceratoppia* Berlese, 1908, and *Pseudoceratoppia* Hammer, 1967, in the family *Metrioppiidae* Balogh, 1943, owing to its 3 pairs of true notogastral hairs. However, in the preceding two genera, the rostrum is whole, acute, in the former one the apex of the tutorium is otherwise shaped, in the latter one there are no insertional points of hairs on the notogaster and the ventral chaetotaxy is also different.

***Hauseroceratoppia horaki* sp. n.**

Measurements: Length: 637-676 μ , width: 489-510 μ .

Dorsal side (Fig. 16): Rostrum with a deep incision and one or two sharp apices. Rostral hairs arising on prodorsal surface, their bases connected by a transversal lath. Apex of tutorium long, hookedly inclinate. Rostral setae shorter than lamellar ones, interlamellar setae longest of all, projecting far beyond rostral apex. Sensillus setiform, ciliate. Notogastral surface with 5 pairs of minute alveoli and 3 pairs of long hairs. A small humeral squama laterally.

Ventral side (Fig. 17): Apodemes weakly developed, short, only *ap. sej.* whole. Epimeral setae thick, robust, especially hair *3b*. 6 pairs of genital, 1 pair of aggenital, 2 pairs of adanal hairs long; adanal hair *ad₃* shortest of all, in a para-anal position. Pori *iad* in a praeanal position. Hairs *ad₁* and *ad₂* considerably longer than hair *ad₃*.

Material examined: Holotype: Am-75/2; 1 paratype: Am-75/3; 1 paratype: Am-75/4. Holotype and 1 paratype preserved in the Muséum d'Histoire naturelle, Genève, 1 paratype deposited (223-PO-77) in the Hungarian Natural History Museum, Budapest.

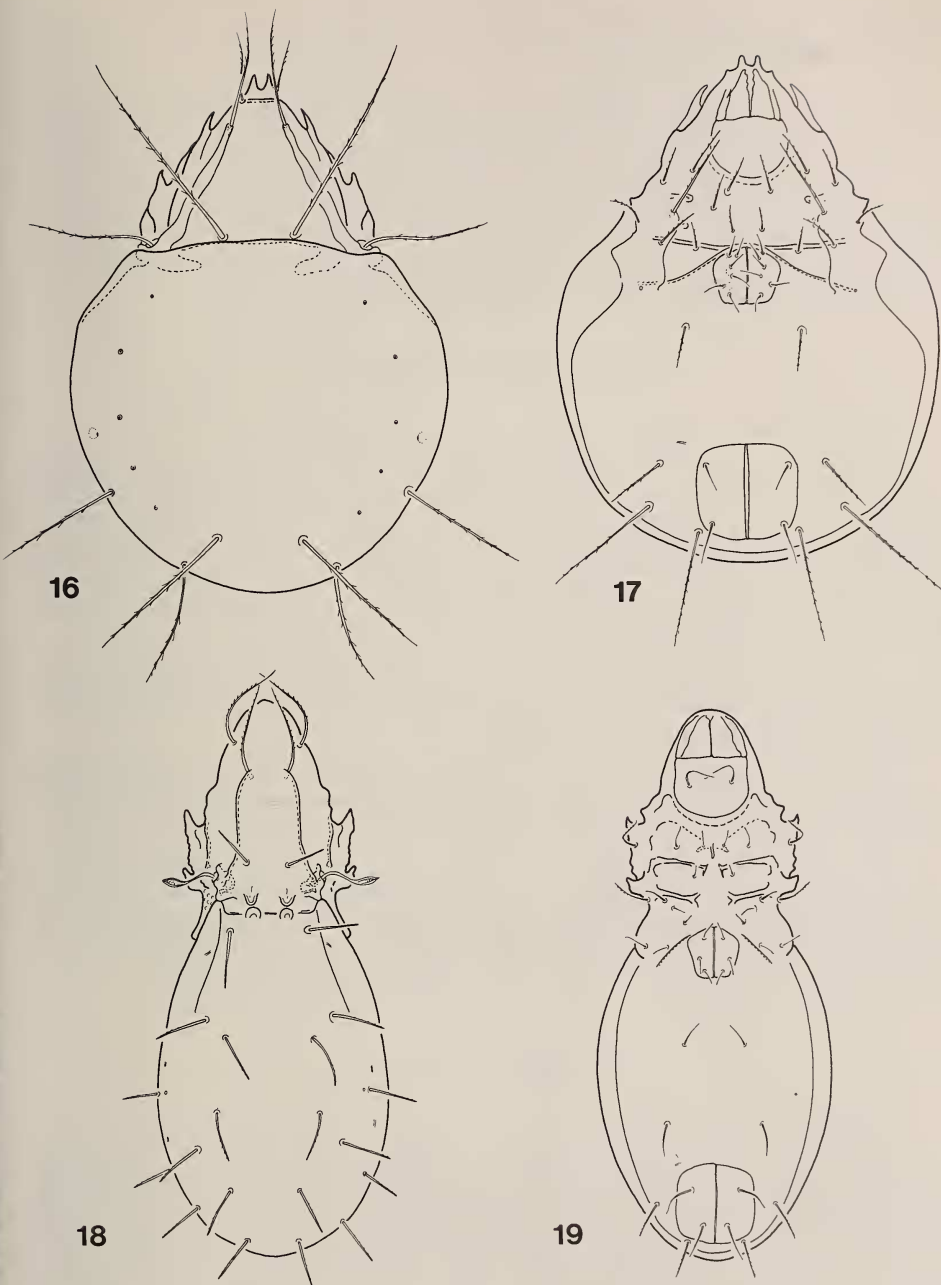
Remark: The new species differs from all related species in the family by the features given in the generic diagnosis.

***Nesotocepheus hauseri* sp. n.**

Measurements: Length: 505-603 μ , width: 201-254 μ .

Dorsal side (Fig. 18): Rostrum very wide, rounded. Rostral setae originating far from each other and from apex. Lamellae short, narrow, their distal ends inclinate, there emitting long and ciliate lamellar hairs. Interlamellar setae essentially shorter, aciculiform, exobothridial hairs minute. Sensillus weakly fusiform, clavus fusiform. Base of propodosoma with 2 well distinguishable condyli, faced also by 2 condyli on notogaster. Exobothridial region densely covered with tubercles. Notogastral surface finely punctate. 10 pairs of notogastral hairs, all aciculiform, slightly ciliate. Among marginal hairs, *p₃* and *r₃* shorter than their mates. Setae *te* and *ti* originating near each other, and removed from hairs *ta*.

Ventral side (Fig. 19): Merely a very short section of sternal apodeme discernible: epimeres open. Epimeral setal formula: 3-1-3-3. Hairs *1c* and *3c* longer than the others.



FIGS. 16-17. *Hauseroceratoppia horaki* sp. n. — 16: dorsal side, 17: ventral side; FIGS. 18-19. *Nesotocepheus hauseri* sp. n. — 18: dorsal side, 19: ventral side.

3 pairs of genital, 1 pair of aggenital, 2 pairs of anal hairs, all thin; 3 pairs of adanals aciculiform, resembling dorsal setae. Pori *iad* in praeanal position.

Material examined: Holotype: Am-75/1; 14 paratypes from the same sample. Holotype and 9 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 5 paratypes deposited (224-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: The segregation of the genus *Nesotocepheus* Hammer, 1972, from *Pseudotocepheus* Balogh, 1961, is justified, amply substantiated by the notogastral condyles and the robust hair on the genu of leg III (conspicuous also in the present species). The new species is easily distinguished from *N. setiger* Hammer, 1972, by the dorsal chaetotaxy and the pori *iad* in a praeanal position.

***Nesotocepheus australis* sp. n.**

Measurements: Length: 777-864 μ , width: 341-415 μ .

Dorsal side (Fig. 20): Rostrum widely rounded. Lamellae narrow, sigmoid, emitting lamellar setae apically; these latter and rostral hairs thin and long, interlamellar setae short and obtuse. Sensillus short, clavus spherically incrassate. Exobothridial hair minute. Prodorsum basally with 2 pairs of distinct condyli, facing 2 other pairs on anterior margin of notogaster. Notogastral hairs obtuse, weakly ciliate. Hair *ta* longest of all, hairs *te* and *ti* originating near each other and removed from setae *ta*. Hairs *ps*₁₋₃ and *r*₃ shorter than the rest.

Ventral side (Fig. 21): Epimeral hairs diverse in length. Genital plates with 3 pairs of setae. 1 pair of aggenital, 2 pairs of anal hairs long and setiform; 3 pairs of comparatively short adanal hairs apically obtuse.

Material examined: Holotype: Am-74/3; 1 paratype from the same sample. Holotype preserved in the Muséum d'Histoire naturelle, Genève, paratype deposited (225-PO-77) in the Hungarian Natural History Museum, Budapest.

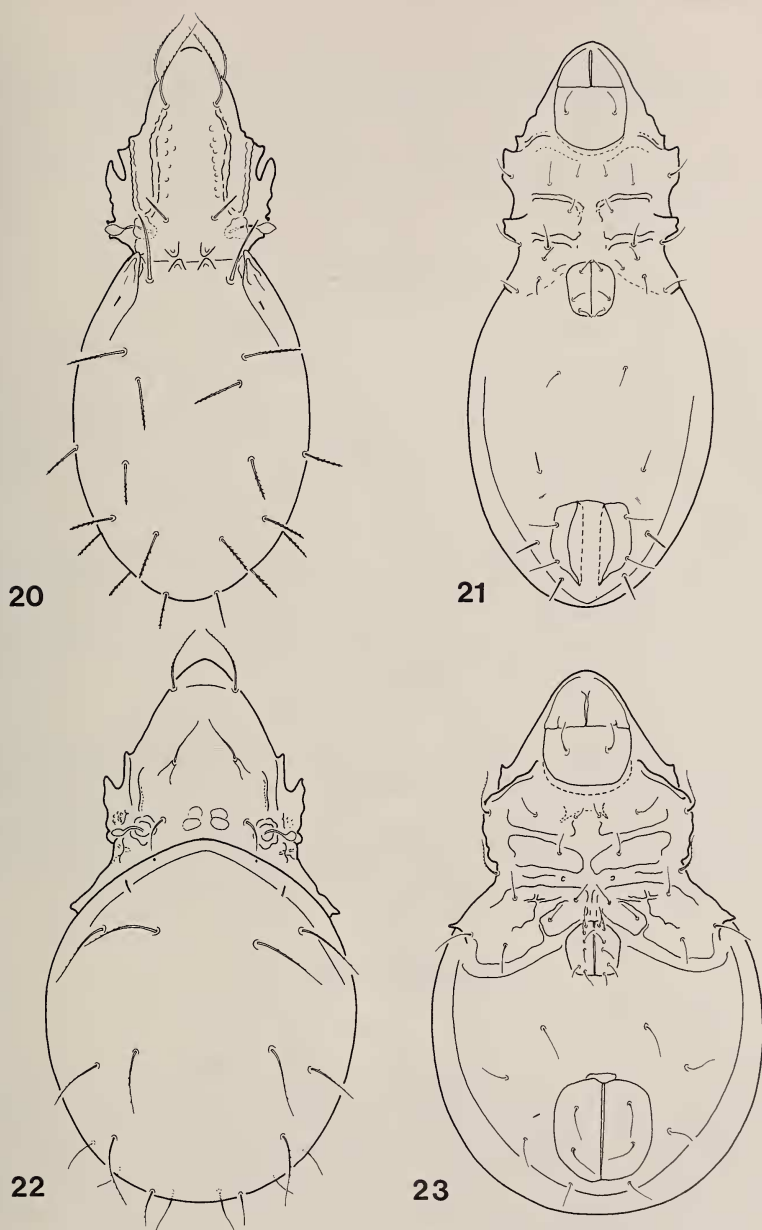
Remarks: On the basis of its habits, the new species greatly resembles *N. hauseri* sp. n., described hereunder. However, the difference in size alone is enormous, the sensillus has a completely different shape and there are also minor differences in the chaetotaxy of the notogaster and the ventral plate (e.g. in this species, the hairs *1a-1b* do not originate on the same transverse line, and the anal hairs are shorter).

***Globoppia wallworki* sp. n.**

Measurements: Length: 402-429 μ , width: 235-247 μ .

Dorsal side (Fig. 22): Rostrum wide, rostral hairs originating far from each other, on surface of prodorsum. Prodorsum with a short lamella, occasionally hardly discernible, but some specimens even with a definite translamella. Lamellar hair considerably shorter than rostral hair; a comparatively long interlamellar seta also present. Stalk of sensillus short, head clavate. Interlamellar region with 4-6 large areolae. Exobothridial hair minute. Notogaster with 5 pairs of longer and 4 pairs of shorter hairs; hair *ta* indicated only by alveoli. Hair *r*₁ shorter than hair *ps*₁; setae *ta-te*, *ti* and *ms* arising along a nearly transverse imaginary line. All hairs weakly ciliate.

Ventral side (Fig. 23): Apodemes, especially sejugal apodeme, very wide. Surface of epimeres with a weak polygonal sculpture, Epimeral hairs relatively long, well dis-



FIGS. 20-21. *Nesotocepeus australis* sp. n. — 20: dorsal side, 21: ventral side; FIGS. 22-23. *Globoppia wallworki* sp. n. — 22: dorsal side, 23: ventral side.

cernible; 6 pairs of genital hairs present: 4 in a longitudinal row anteriorly. Aggenital hairs longer than anal and adanal setae. Pori *iad* transverse and situated far from anal opening.

Material examined: Holotype: Am-75/3; 6 paratypes from the same sample. Holotype and 4 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (226-PO-77) in the Hungarian Natural History Museum, Budapest.

Remark: The new species is characterized by the short lamella on the prodorsum, the shape of the sensillus and the notogastral hairs; this combination is not known in any *Globoppia* species.

***Oppia patagonica* sp. n.**

Measurements: Length: 253-274 μ , width: 131-152 μ .

Dorsal side (Fig. 24): Rostrum rounded, emitting long rostral setae. Prodorsal surface with a robust, distally and usually furcate costula, basally (in interbothridial region) terminating in teeth directed posteriorly. Lamellar hairs originating anterior to its distal end, comparatively short, but interlamellar setae strikingly elongated. Stalk of sensillus short, clavus fusiform. Notogaster with 9 pairs of setae and insertional points of hairs *ta*. Setae *te* and *ti* arising on an approximately transverse line.

Ventral side (Fig. 25): Apodemes well developed, also sternal, second and sejugal apodemes wide, this latter with an angulate thickening. Epimeral setae relatively short, nearly equal in length, but hair *4c* shorter than *4b*. 6 pairs of genital hairs present, the two pairs originating on posterior part of genital plate longer than the rest; aggenital, anal and adanal setae thin, simple. Hair *ad*₃ in praeanal position. Pori *iad* removed far from anal opening, in semitransverse position.

Material examined: Holotype: Am-75/3; 5 paratypes from the same sample. Holotype and 3 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (227-PO-77) in the Hungarian Natural History Museum, Budapest.

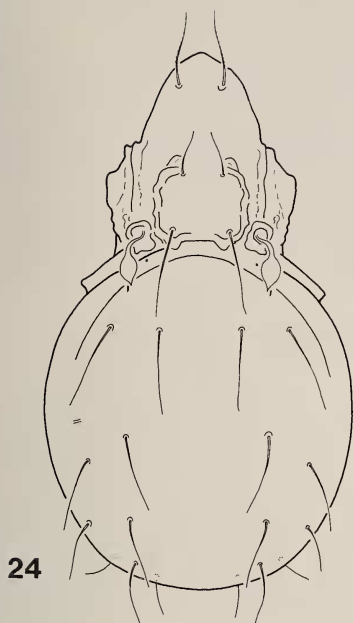
Remarks: The new species stands near to the species and its allies discussed above, but the special evolvment of the costula, the heavy interbothridial tubercles, and the shape and position of the hairs distinguish it from its known congeners.

***Oppia pseudocorrugata* sp. n.**

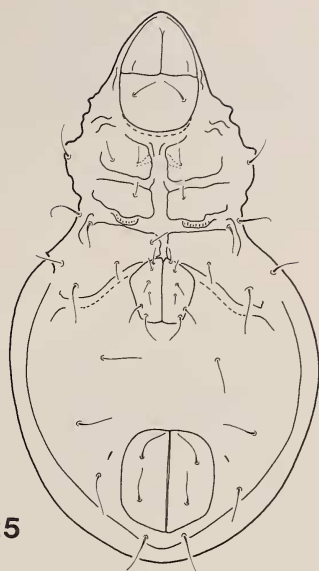
Measurements: Length: 266-279 μ , width: 135-148 μ .

Dorsal side (Fig. 26): Rostrum widely rounded. Rostral setae arising on prodorsal surface, far from margins. Surface of costula with a more or less developed costula, an obsolescent transverse costula and several transverse laths. Interbothridial region with 2-3 pairs of large areolae and a basal chitinous thickening. Lamellar setae short, considerably shorter than rostral and the still longer interlamellar hairs. Clavus of sensillus incrassate, fusiform. Notogaster with 9 pairs of hairs, 7 very long; hair *ta* indicated only by insertional points.

Ventral side (Fig. 27): Second and sejugal apodemes well developed. Epimeral surfaces with a polygonal sculpture. Hairs of epimeral surfaces long, inner ones longer than outer setae. 6 pairs of genital setae present; adanal hair *ad*₃ in praeanal, *ad*₂ in para-anal position. Pori *iad* far removed from anal opening, in a slightly transverse position.



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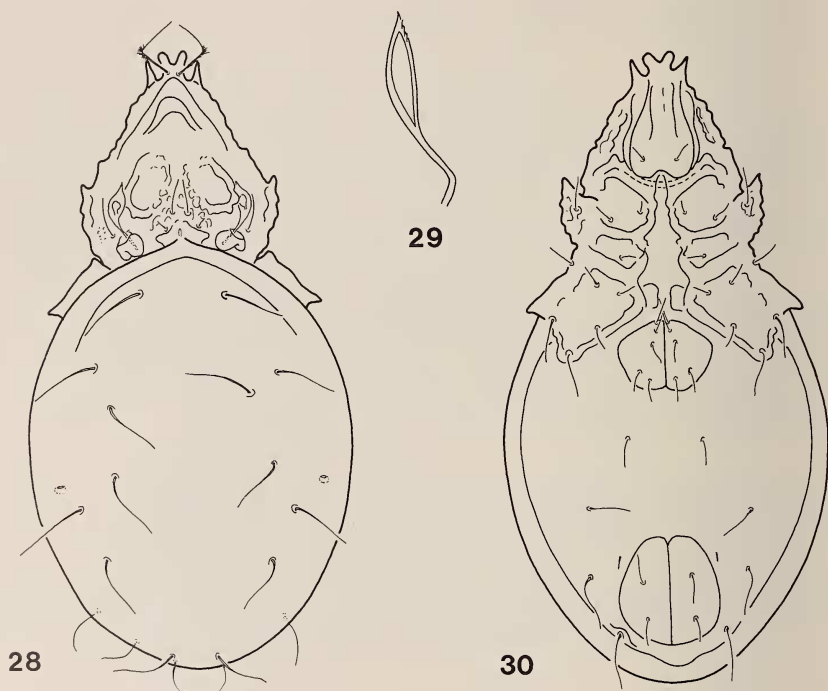


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FIGS. 24-25. *Oppia patagonica* sp. n. — 24: dorsal side, 25: ventral side. FIGS. 26-27. *Oppia pseudocorrugata* sp. n. — 26: dorsal side, 27: ventral side.

Material examined: Holotype: Am-75/3; 6 paratypes from the same sample. Holotype and 4 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (228-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: The new species belongs in the alliance of *O. multicorrugata* Hammer, 1962. However, the species constituting this group have a short interlamellar hair, and also essentially shorter notogastral setae. The prodorsal costulae and rugae are exceedingly divers in shape: they do not constitute any specific difference (e.g. WALLWORK 1964b: 146-7).



FIGS. 28-30. *Suctobelba diceros* sp. n. — 28: dorsal side, 29: sensillus, 30: ventral side.

Suctobelba diceros sp. n.

Measurements: Length: 344-357 μ , width: 176-193 μ .

Dorsal side (Fig. 28): Rostrum with a U-shaped incision medially, the two apices obtuse, rounded, bordered by a wide excision and each with a large sharp tooth. Rostral hair characteristically angulate. Prodorsal surface anteriorly with 3 arcuate lines, "fenestrate" spots present only in basal halves. Lamellar setae originating from an angulate tubercle, backed immediately by interlamellar hairs, standing also near each other. Sensillus (Fig. 29) with a fusiform clavus, bearing some minute cilia. Ten pairs of notogastral hairs, all thin and arcuate.

Ventral side (Fig. 30): Epimeral region convex towards mentum (anteriorad). No sternal apodeme developed: apodemes not touching medially, but enclosing an inserted wide and free zone. Epimeral setae thin and comparatively long. Genital opening comparatively wide. 5 pairs of thin genital, 1 pair of aggenital, 2 pairs of anal and 3 pairs of adanal hairs present; hair ad_3 in praeanal position.

Material examined: Holotype: Am-75/1; 3 paratypes from the same sample. Holotype and 2 paratypes preserved in the Muséum d'Histoire naturelle, Genève, and 1 paratype deposited (229-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: No species with a similar rostrum among those comprising *Suctobelba* Paoli, 1908, has been known. The ornamentation of the prodorsum is also unique.

***Anderemaeus hammeri* sp. n.**

Measurements: Length: 616-643 μ , width: 383-410 μ .

Dorsal side (Fig. 31): Rostral apex acute; rostral hair thin, ciliate, originating on prodorsum. Interlamellar hair long, obtuse (contrarily to former one). Lamellae wide, robust, characteristic of genus. Sensillus clavately incrassate, distal end rotund. Humeral squama well developed. Notogastral surface ornamented with foveolae. Except hair ta , all setae obtuse, slightly thickened, ciliate, hair te arising far anterior to hair ti , longer, nearly one and a half times as long as hair ms . Hairs ps considerably shorter than the others.

Ventral side (Fig. 32): Epimeral region with 4 pairs of heavily incrassate apophyses backing each other. Epimeral hairs approximately equal in length. 6 pairs of genital, 1 pair of short aggenital, 2 pairs of anal and 3 pairs of adanal hairs present, hair ad_3 very short, in a para-anal position.

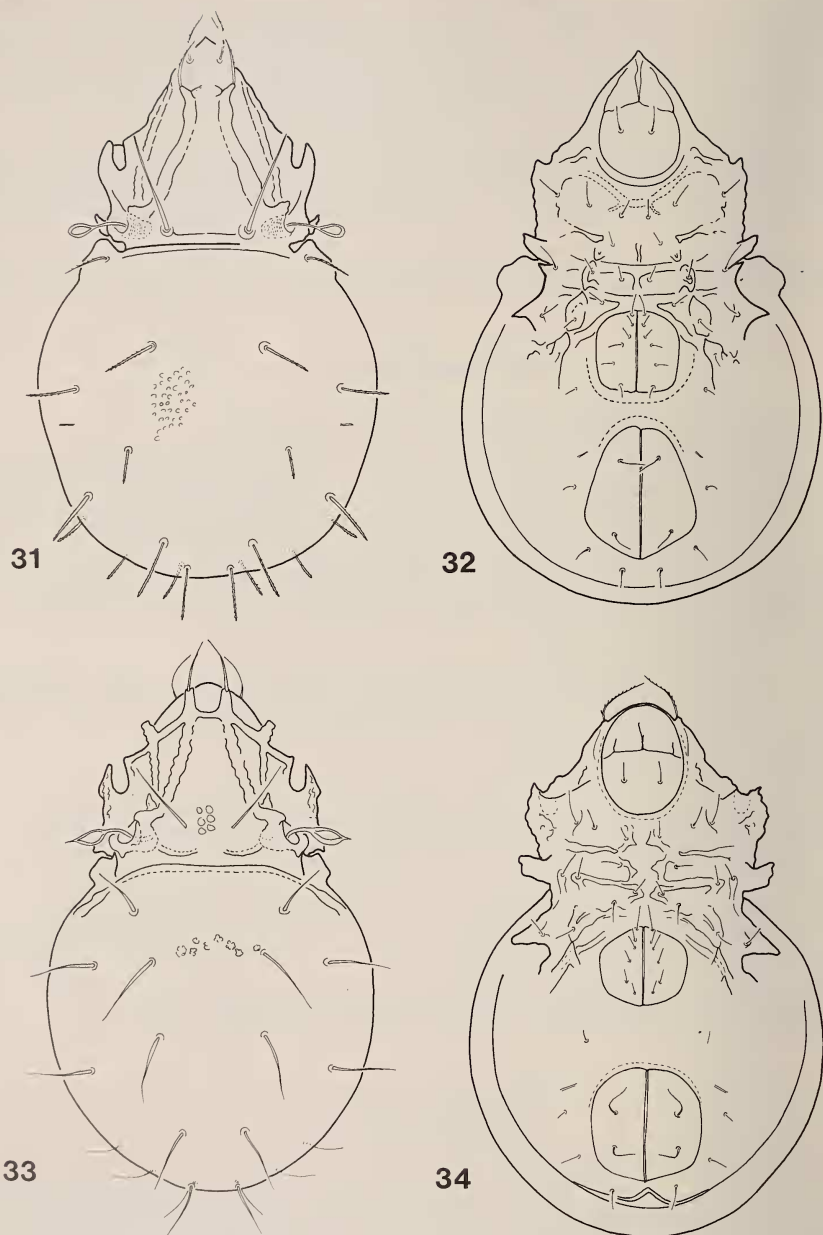
Material examined: Holotype: Am-75/2; 6 paratypes from the same sample. Holotype and 4 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (230-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: The new species stands near *Anderemaeus magellanicus* Hammer, 1962. It seems that HAMMER (1962a) collected the present species, too, and published a drawing of its sensillus (fig. 46a). The specimens now at hand differ, beside the shape of the sensillus, from *A. magellanicus* also by the position of the setae te - ti (in *magellanicus*, they are aligned nearly transversally), and in the lengths of the hairs te and ms .

***Cristeremaeus clavatus* sp. n.**

Measurements: Length: 287-296 μ , width: 209-214 μ .

Dorsal side (Fig. 33): Rostrum widely rounded. Lamella and tutorium connected by a transverse lath on prodorsum. Free cuspis of lamella hardly shorter than tutorium. Interlamellar region smooth, with 3 pairs of weak foveolae. Head of sensillus fusiform, with a sharp apex. Bothridium heavily sclerotized. Dorsosejugal suture smooth, humeral squama very large, convex. Notogastral surface convex, hairs te and ti , as well as ms and r_3 arranged along a transverse line. All setae basally slightly incrassate, then distally abruptly attenuating. Some foveolae present between hairs te , otherwise notogaster smooth.



FIGS. 31-32. *Anderemaeus hammerae* sp. n. — 31: dorsal side, 32: ventral side; FIGS. 33-34. *Cristemaeus clavatus* sp. n. — 33: dorsal side, 34: ventral side.

Ventral side (Fig. 34): Epimeral region with several apophyses, transversally or longitudinally opposing each other. Epimeral setal formula: 3-1-3-3. All epimeral setae simple, thin. 6 pairs of genital hairs standing in a nearly longitudinal row; aggenital and ad_3 minute, hairs ad_2 and anal setae longer. Pori iad situated far from anal opening, laterally, in an oblique position.

Material examined: Holotype: Am-75/2; 1 paratype from the same sample. Holotype preserved in the Muséum d'Histoire naturelle, Genève, paratype deposited (231-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: Only the type-species of the genus *Cristeremaeus* Balogh et Csiszár, 1963, has so far been known. The new species differs from it by the shape of the sensillus, the shape and arrangement of the notogastral hairs, the length of the epimeral setae, etc.

***Maculobates breviporus* sp. n.**

Measurements: Length: 757-789 μ , width: 435-474 μ .

Dorsal side (Fig. 35): Rostrum rounded, lateral margins of prodorsum concave. Rostral hair essentially shorter than extraordinarily long lamellar and interlamellar setae. Sensillus small, its head clavate. Dorsosejugal suture discernible as a weak but convex line between bases of interlamellar hairs. Pteromorpha small, discrete, rims densely striated. 10 pairs of long notogastral hairs and 4 pairs of *areae porosae* present; Aa biggest of all, yet not longer than one-third (or eventually half) length of notogastral hairs. Hair r_1 slightly shorter than the rest.

Ventral side (Fig. 36): Apodemes thin, weakly developed. Epimeres open, without surface sculpture; their setae minute, the 3 pairs of genital, 1 pair of aggenital, 2 pairs of anal and especially the 3 pairs of adanal hairs considerably longer.

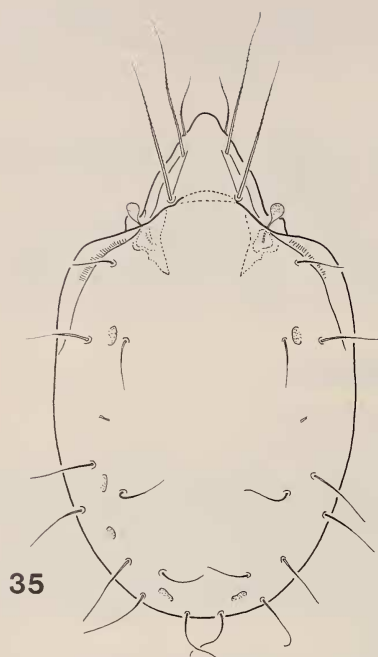
Material examined: Holotype: Am-75/1; 2 paratypes from the same sample; 2 paratypes: Am-75/3. Holotype and 2 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (232-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: The genus *Maculobates* Hammer, 1962, contains one South American and some New Zealand species. I consider the assignment of the New Zealand species to this genus as doubtful, because all display merely 3 pairs of *areae porosae*. The new species stands very near to the type-species, which was found also in Patagonia! (HAMMER 1962a: 22), but the present specimens could not be drawn under it. The difference exists primarily in the size and form of the *areae porosae* as well as in the lengths of the hairs. The length of Aa of the new species is at most half that of the notogastral hairs, whereas *area porosa* of *M. longiporus* is often as long as the notogastral hairs (HAMMER 1962a: fig. 54).

***Tuxenia brevisetosa* sp. n.**

Measurements: Length: 457-484 μ , width: 292-329 μ .

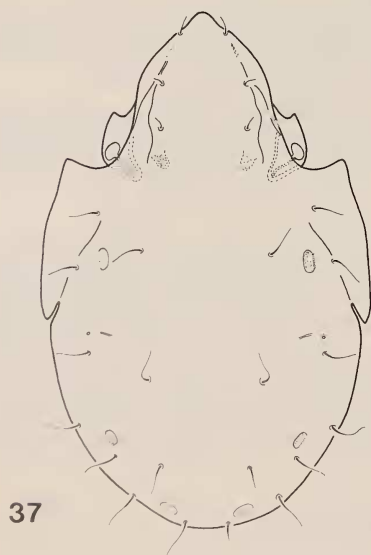
Dorsal side (Fig. 37): Rostrum rounded. Lamellae without cuspis, praelamella hardly discernible. Rostral, lamellar, and interlamellar setae very short, interlamellar ones longest of them, but still shorter than notogastral hairs. Clavus of sensillus uncovered in superior view, wider than long. Dorsosejugal suture not recognizable. 10 pairs



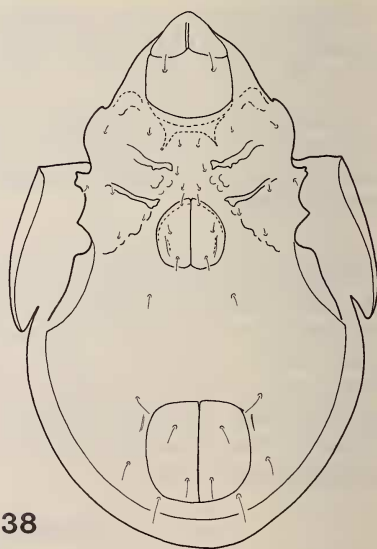
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FIGS. 35-36. *Maculobates breviporosus* sp. n. — 35: dorsal side, 36: ventral side.

FIGS. 37-38. *Tuxenia brevisetosus* sp. n. — 37: dorsal side, 38: ventral region.

of thin, arcuate notogastral hairs and 3 pairs of comparatively large *areae porosae*, area porosa *Aa* approximately as long as notogastral hairs.

Ventral side (Fig. 38): Apodemes short, sternal apodeme absent. Epimeral surface with some irregular alveoli. Epimeral setal formula: 3-1-3-2, all setae short, only their alveoli clearly recognizable. 3 pairs of genital, 1 pair of aggenital, 2 pairs of anal and 3 pairs of adanal hairs present, in an arrangement according to that of its congeners.

Material examined: Holotype: Am-75/1; 5 paratypes from the same sample. Holotype and 3 paratypes preserved in the Muséum d'Histoire naturelle, Genève, 2 paratypes deposited (233-PO-77) in the Hungarian Natural History Museum, Budapest.

Remarks: On the basis of the absent praelamella and the formation of the lamella, the new species is to be assigned to the genus *Tuxenia* Hammer, 1958, although there is no sharp (but a rather obscure) delimitation between this genus and *Totobates* Hammer, 1961. The generic separation of the species concerned is not really feasible. The new species is well characterizable by its short sensillus, and extremely short rostral as well as lamella setae: on this basis, it is satisfactorily separable from all of its allies with 3 pairs of genital hairs.

REFERENCES

- BALOGH, J. 1972. The Oribatid Genera of the World. *Akadémiai Kiadó, Budapest*, 183 pp.
- BALOGH, J. and J. CSISZÁR. 1963. The Zoological Results of Gy. Topál's Collectings in South Argentina, 5. Oribatei (Acarina). *Annls hist.-nat. Mus. nat. hung.* 55: 463-485.
- BALOGH, J. and S. MAHUNKA. 1967. The Scientific Results of the Hungarian Soil Zoological Expedition to South America 2. *Notophtiracarus chilensis* n. gen., n. sp. (Acari). *Opusc. zool. Bpest*, 7: 43-45.
- 1968. The Scientific Results of the Hungarian Soil Zoological Expeditions to South America 5. Acari: Data to the Oribatid Fauna of environment of Cordoba, Argentina. *Opusc. zool. Bpest*, 8: 317-340.
- 1969a. The Scientific Results of the Hungarian Soil Zoological Expeditions to South America 10. Acari: Oribatids, collected by the Second Expedition. I. *Acta zool. hung.* 15: 1-21.
- 1969b. The Scientific Results of the Hungarian Soil Zoological Expeditions to South America 12. Acari: Oribatids from the materials of the Second Expedition. III. *Acta zool. hung.* 15: 255-275.
- 1969c. The Zoological Results of the Hungarian Soil Zoological Expeditions to South America 11. Acari: Oribatids from the material of the Second Expedition. II. *Opusc. zool. Bpest*, 9: 31-69.
- 1974. A foundation of the Oribatid (Acari) Fauna of Cuba. *Acta Zool. Ac. Sci. Hung.* 20: 1-25.
- 1977a. New data to the knowledge of the Oribatid Fauna of Neogea (Acari). I. *Acta zool. hung.* 23: 1-28.
- 1977b. New data to the knowledge of the Oribatid Fauna of Neogea (Acari). II. *Acta zool. hung.* 23: 247-265.
- 1978a. New data to the knowledge of the Oribatid Fauna of the Neogea (Acari). III. *Acta zool. hung.* 24: 269-299.
- 1978b. A survey of the family Dampfiellidae Balogh with nine new *Beckiella* Grandjean species from Cuba (Acari, Oribatida). *Annls. hist.-nat. Mus. natn. hung.* 70: 331-344.

- BALOGH, J. and S. MAHUNKA. 1979. New data to the knowledge of the Oribatid Fauna of the Neogea (Acari). IV. *Acta zool. hung.* 25: 35-60.
- BECK, L. 1963. Zur Ökologie und Taxionomie der neotropischen Bodentiere I. Zur Oribatiden-Fauna Perus. *Zool. Jb. Syst.* 90: 299-392.
- BERLESE, A. 1888. Acari Austro-Americani quos collegit Aloysius Balzan. *Bull. Soc. ent. ital.* 20: 171-222.
- COVARRUBIAS, R. 1967. New Oribatids (Acarina) from Chile. *Opusc. zool. Bpest* 7: 89-116.
- DALENIUS, P. and O. WILSON. 1958. On the soil fauna of the Antarctic and Subantarctic islands. The Oribatidae (Acari). *Ark. Zool., ser. 2*, 11: 393-425.
- HAMMER, M. 1958. Investigations on the Oribatid Fauna of the Andes Mountains. I. The Argentine and Bolivia. *Biol. Skr.* 10, (1), 129 pp.
- 1962a. Investigations on the Oribatid Fauna of the Andes Mountains. III. Chile. *Biol. Skr.* 13, (2), 96 pp.
- 1962b. Investigations on the Oribatid Fauna of the Andes Mountains. IV. Patagonia. *Biol. Skr.* 13, (3), 37 pp.
- 1966. Investigations on the Oribatid Fauna of New Zealand. Part I. *Biol. Skr.* 15, (2), 108 pp.
- 1967. Investigations on the Oribatid Fauna of New Zealand. Part II. *Biol. Skr.* 15 (4), 64 pp.
- 1968. Investigations on the Oribatid Fauna of New Zealand. Part III. *Biol. Skr.* 16 (2), 96 pp.
- 1972. Investigation on the Oribatid Fauna of Tahiti, and on some Oribatids found on the Atoll Rangiroa. *Biol. Skr.* 19 (3), 65 pp.
- HORAK, E. 1980. Agaricales and related secotiaceous Gasteromycetes. *Flora Criptogamica de Tierra del Fuego* 13: in press.
- KRAMER, P. 1898. Acariden. In: *Ergebnisse der Hamburger Magalhaensischen Sammelreise*, 2, *Arthropoden*, 40 pp.
- SCHUSTER, R. 1962. Neue *Mesoplophora*-Vorkommen in der Neotropis (Arach. Acari, Oribatei). *Senckenberg. biol.* 43: 489-495.
- SELLNICK, M. 1922a. Milben aus der Sammlung des Deutschen Entomologischen Instituts. I. Oribatidae. *Ent. Mitt.* 11: 18-20.
- 1922b. Brasilianische Oribatiden (Acari) II. *Ent. Mitt.* 11: 179.
- SHEALS, J. C. and D. MACFARLANE. 1966. A new species of *Neophthiracarus* (Acari: Phthiracaridae) from Tierra del Fuego. *Ann. Mag. nat. Hist., ser. 13*, 9: 233-237.
- WALLWORK, J. 1963. The Oribatei (Acari) of Macquarie Island. *Pacif. Insects* 5: 721-769.
- 1964a. On the Genus *Totobates* Hammer, 1961 (Acarina: Oribatidae). *Pacif. Insects* 6: 741-746.
- 1964b. Insects of Campbell Islands. Cryptostigmata (Oribatei): Oppiidae. *Pacif. Insects Monogr.* 7: 138-147.
- 1964c. Evolution of body setae with especial reference to the Family Metrioppiidae (Acari: Oribatei). *Acarologia, fasc. h. s.*: 80-84.
- 1965. The Cryptostigmata (Acari) of Antarctica with special reference to the Antarctic Peninsula and South Shetland Islands. *Pacif. Insects* 7: 453-468.
- 1966. More Oribatid mites (Acari: Cryptostigmata) from Campbell I. *Pacif. Insects* 8: 849-877.
- 1970. Acarina: Cryptostigmata of South Georgia. *Pacif. Insects Monogr.* 23: 161-178.
- 1972. Some Cryptostigmatid mites (Acari: Cryptostigmata) from Crozet Islands. *Pacif. Insects* 14: 27-37.
- 1973. Zoogeography of some terrestrial Micro-Arthropoda in Antarctica. *Biol. Rev.* 48: 233-259.

WILLMANN, C. 1930. Neue Oribatiden aus Guatemala. *Zool. Anz.* 88: 239-246.

- 1933. Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930. *Trimalaconothrus pilipes*, eine neue Oribatide aus Westindien. *Zool. Jb. Syts.* 64: 447-452.
- 1936. Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930. *Zool. Jb. Syst.* 67: 429-442.

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